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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,746	11/25/2003	Hongyu Wang	03049US	8965

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

12

<b>Office Action Summary</b>	<b>Application No.</b> 10/723,746	<b>Applicant(s)</b> WANG, HONGYU	
	<b>Examiner</b> Lynette T. Umez-Eronini	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of claims 1-7 in the reply filed on 10/12/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US 6,027,699).

Miura teaches, a polishing composition useful for polishing semiconductors (column 1, lines 1-2) and which comprises silica and water (Abstract column 3, lines 8-11). The content of silica is from 0.1 to 50 by weight (column 3, lines 56-59). Various additives such as surfactants such as sodium alkylbenzene sulfonate and a condensate of formalin with naphthalene sulfonic acid (same as applicant's polynaphthalene and sulfonated polynaphthalene surfactant) and aluminum oxides, zirconium oxides and titanium oxides, can be incorporated into the polishing composition (column 5, line 51 - column 6, line 8). Miura also teaches the polishing composition has a pH of at least 7 (column 6, lines 33-35), which encompasses a pH of less than 10. The aforementioned reads on,

An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.1 to 40 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge;

at least polynaphthalene surfactant; and

a balance of water with the slurry, **in claim 1;**

wherein the metal oxide particles comprise an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia, **in claims 2, 5, and 7;**

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wherein the metal oxide particles are alumina, **in claim 3**;

An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.25 to 25 and 0.5 to 15 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge and the metal oxide particles comprising an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia;

at least polynaphthalene surfactant; and

a balance of water, respectively **in claims 4 and 6**.

Miura differs in failing to specify the content of polynaphthalene surfactant as recited in claims 1, 4, and 6 and the slurry having a pH of less than 5 and 4, respectively in claims 4 and 6.

However, Miura illustrates the specific combination of a metal oxide particles, surfactant, and water is known. Since Miura teaches the same composition as claimed in the present invention, then using Miura's composition in the same manner as claimed by applicant would result the same in polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any proportion surfactant and pH in the Miura reference that would effectively accomplish the disclosed composition because it has been held that there is no invention where the

difference in proportions is not critical and was ascertained by routine experimentation because the determination of workable ranges is not considered inventive. See *In re Swain and Adams*, 70 USPQ 412 (CPA 1946).

### ***Response to Arguments***

5. Applicant's arguments filed 10/12/2005 have been fully considered but they are not persuasive. Applicant traverses the 103(a) rejection of claims 1-7 over Miura et al. (US 6,027,699). Applicant argues, Miura fails to disclose, suggest, or render it obvious that polynaphthalene surfactant adsorbs onto alumina particles to reduce scratching of semiconductor substrates.

Miura's failure is acknowledged. However, Miura's polishing composition comprises silica and water (Abstract, column 1, lines 1-2; and column 3, lines 8-11); various additives such as surfactants such as sodium alkylbenzene sulfonate and a condensate of formalin with naphthalene sulfonic acid (same as applicant's polynaphthalene and sulfonated polynaphthalene surfactant) and aluminum oxides, zirconium oxides and titanium oxides, can be incorporated into the polishing composition (column 5, line 51 - column 6, line 8). Miura also illustrates the specific combination of a metal oxide particles, surfactant, and water is known. Since Miura teaches the same composition as claimed in the present invention, then using Miura's composition in the same manner as claimed by applicant would result the same in polynaphthalene surfactant for adsorption with at least a portion of the surface of the

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metal oxide particles in situ and for reducing scratching of the semiconductor substrates.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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ltue

December 16, 2005



SHAMIM AHMED  
PRIMARY EXAMINER